

IN THE CLAIMS:

[Please cancel claims 3, 9 and 15 without prejudice or disclaimer.]

Please amend claims 1, 2, 7, 8, 13, 14 and 19 as follows:

1. (Amended) A control circuit of a DC-DC converter that generates either one of a step-down control signal and a step-up control signal, the control circuit comprising:

a switch circuit for outputting the step-down control signal in response to a first switching signal and outputting the step-up control signal in response to a second switching signal; and

21 a switching signal generation circuit connected to the switch circuit for selectively generating the first and second switching signals using a duty setting signal, which controls either one of the step-down control signal and the step-up control signal, wherein the switching signal generation circuit includes a comparator for comparing the duty setting signal with a reference voltage including the maximum voltage of a triangular wave signal, and wherein, based on a comparison result, the comparator generates the first switching signal when the duty setting signal represents a step-down operation and generates the second switching signal when the duty setting signal represents a step-up operation.

2. (Amended) The control circuit according to claim 1, wherein the reference voltage includes a median voltage between the maximum voltage of the triangular wave

signal and a voltage corresponding to a predetermined percent of the maximum voltage, and wherein the comparator compares the voltage of the duty setting signal with the median voltage.

7. (Amended) A control circuit of a DC-DC converter comprising:

a first PWM comparator for comparing an input signal, a duty setting signal, and a triangular wave signal to generate either one of a first step-down control signal and a first step-up control signal;

a second PWM comparator for comparing the input signal and the triangular wave signal to generate either one of a second step-down control signal and a second step-up control signal;

a switch circuit connected to the first and second PWM comparators for outputting the first and second step-down control signals in response to a first switching signal and outputting the first and second step-up control signals in response to a second switching signal; and

a switching signal generation circuit connected to the switch circuit for selectively generating the first and second switching signals using the duty setting signal, wherein the switching signal generation circuit includes a comparator for comparing the duty setting signal with a reference voltage including the maximum voltage of the triangular wave signal, and wherein, based on a comparison result, the comparator generates the first switching signal when the duty setting signal represents a step-down operation and

generates the second switching signal when the duty setting signal represents a step-up operation.

8. (Amended) The control circuit according to claim 7, wherein the reference voltage includes a median voltage between the maximum voltage of the triangular wave signal and a voltage corresponding to a predetermined percent of the maximum voltage, and wherein the comparator compares the voltage of the duty setting signal with the median voltage.

13. (Amended) A DC-DC converter including a step-down circuit for decreasing an input voltage to generate a step-down output voltage or a step-up circuit for increasing the input voltage to generate a step-up output voltage, the DC-DC converter comprising:

a control circuit connected to the step-down circuit or the step-up circuit for generating either one of a step-down control signal, which controls the step-down circuit, or a step-up control signal, which controls the step-up circuit, wherein the control circuit includes;

a switch circuit for outputting the step-down control signal in response to a first switching signal and outputting the step-up control signal in response to a second switching signal; and

a switching signal generation circuit connected to the switch circuit for selectively generating the first and second switching signals using a duty setting signal, which

A3 controls the duty of either one of the step-down control signal and the step-up control signal, wherein the switching signal generation circuit includes a comparator for comparing the duty setting signal with a reference voltage including the maximum voltage of a triangular wave signal, and wherein, based on a comparison result, the comparator generates the first switching signal when the duty setting signal represents a step-down operation and generates the second switching signal when the duty setting signal represents a step-up operation.

14. (Amended) The DC-DC converter according to claim 13, wherein the reference voltage includes a median voltage between the maximum voltage of the triangular wave signal and a voltage corresponding to a predetermined percent of the maximum voltage, and wherein the switching signal generation circuit compares the voltage of the duty setting signal with the median voltage.

19. (Amended) A method for controlling a DC-DC converter including a step-down circuit or a step-up circuit, the method comprising the steps of:

generating either one of a step-down control signal, which controls the step-down circuit, or a step-up control signal, which controls the step-up circuit;

comparing a duty setting signal with a reference voltage including the maximum voltage of a triangular wave signal, wherein the duty setting signal controls the duty of either one of the step-down control signal and the step-up control signal;

generating a first switching signal for selecting the step-down control signal when the duty setting signal represents a step-down operation based on a comparison result;

generating a second switching signal for selecting the step-up control signal when the duty setting signal represents a step-up operation based on the comparison result;

providing the step-down control signal to the step-down circuit in response to the first switching signal; and

providing the step-up control signal to the step-up circuit in response to the second switching signal.

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A marked-up version of the amended claims is enclosed as required by 37 C.F.R. § 1.121.